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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,189	07/29/2003	Arkady Samuilovich Dyckman	138482-1	5681

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06/23/2004

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EXAMINER

VOLLANO, JEAN F

ART UNIT PAPER NUMBER

1621

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/629,189	<b>Applicant(s)</b> DYCKMAN ET AL.	
	<b>Examiner</b> Jean F. Vollano	<b>Art Unit</b> 1621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/23/04</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers ( Russian Federation 2001120653/04 filed 7/29/2002) submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. The instant application has a figure (i.e. drawing). However there is no section in the specification which is entitled “ Brief Description of the Drawing”, with a short description following it ,as required. Therefore the specification is objected to. Please make the appropriate correction.

### *Claim Rejections - 35 USC § 112*

Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for ammonium carbonate, bicarbonate or carbamate, does not reasonably provide enablement for any compound that can be categorized as an ammonium salt. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use and make the invention commensurate in scope with these claims.

The process of preparing cumene hydroperoxide by oxidation is well known as applicant has pointed out in the specification. Therefore the ammonium salt , ammonia and their concentration ranges are seemingly the essence of the invention. However there are thousands of ammonium salts known. There are inorganic ones such as ammonium phosphate, ammonium borate , or ammonium nitride as well as other salts from transition metal complexes (e.g. ammonium permanganate). There are organic salts such as ammonium citrate or ammonium

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acetate. There are porphine ammonium salts and phthalocyanine ammonium salts. The list goes on and on.

Again the process is well known. However it is less well known when there is an addition of ammonia and an ammonium salt. It is this combination which appears to be essential since the oxidation of compounds to form the cumene hydroperoxide is well known as shown by the PTO 1449 references. Since there are very many salts that are ammonium salts and that appears to be one of the essential reagents/catalysts then it would take undue experimentation to test each of the salts that can be considered and ammonium salt to see if the process is successful with the use of a particular ammonium salt that is not a carbonate, bicarbonate or a carbamate.

The scope of the claims is broader than the scope of the enablement and it takes undue experimentation to use the process to the scope that is being claimed.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation of "wherein the process is conducted in the presence of a mixture ..." There is no process given there are no reagents. It is unclear what is being oxidized and how it is being oxidized. There is no process that clearly and concisely points out the metes and bounds of what is being claimed. There is essential subject matter missing including what is being oxidized and by what? Do we start with an alcohol or a hydrocarbon or something else?

Claim 1 recites a "continuous aqueous-emulsion oxidation in a series of oxidation" (the last word should be plural-i.e. oxidations). The claim reads on a series of oxidations. However it

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is unclear what is meant by that limitation. Is there a multiple oxidation process going on wherein the peroxide is one step of say a hydrocarbon being oxidized into a alcohol which is then oxidized further to a aldehyde etc? Or is the series of oxidations referring to different catalysts or conditions which oxidize any unreacted starting material ( depending on what it is since there is really no conditions? It is not even clear by the limitations presented if there must be ammonium salts in each oxidation step or in at least one. Or is applicant trying for a Jepson format which would only need the improvement to be stated? However if that is the case there needs to be a phrase similar to "wherein the improvement consists of". The claim is confusing as written as to the metes and bounds that are being claimed by the instant invention.

Claim 1 states that the process is conducted in "the presence of a mixture of an aqueous solution of an ammonium salt with a concentration of 0.001-0.5 mass %" . Is this limitation as compared with the total mass? Or does the limitation as compared with the mass of the starting material (whatever it may be)? The claim is confusing as to the metes and bounds of the instant invention. The same problem is occurring with the ammonium concentration.

Claim 2 recites the limitation of "the first oxidation reactor ... the last oxidation reactor". This lacks antecedent basis.

The examiner notes that claim 3 has the origin of the ammonium salt used. This is not a limitation in the process as written only a definition of the origin of the salt. If applicant wants this as part of the reaction then the formation of the salt should be written in an active form as one of the steps in the reaction. It is also unclear if the limitation is trying to state that the ammonium salt is ammonium carbonate or ammonium hydrogen carbonate by the reaction given? The claim is confusing as to what is trying to be limited.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakoshansky et al (US 5,767,322).

Zakoshansky teaches a process for the oxidation in a series of reactors (one of which contains the ammonium salt and ammonia )by using a water emulsion of cumene which is oxidized by air/oxygen to form cumene hydroperoxide (see abstract and columns 1-2).

Zakoshansky teaches that the addition of ammonia inhibits the formation of byproducts (see column 3, lines 39-50).

Zakoshansky teaches that the ammonia is usable in a single stage or multistage process (e.g. series of oxidation reactors) (see column 3, lines 48-50).

Zakoshansky teaches that the salts are carbonates and bicarbonates (see column 3 ).

Zakoshansky teaches that the temperature decreases from reactor to reactor beginning with 107 and going down to 92<sup>0</sup>C in table 3 column 8 and claims in claim 6 a first stage at a temperature of 95-105 and a second stage of 80 to 100<sup>0</sup>C.

Zakoshansky differs in that a ratio of ammonium salt and ammonia is not given.

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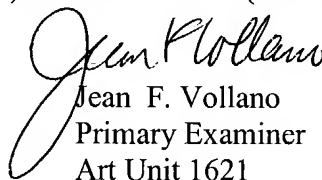
It is well within the purview of one of ordinary skill in the art having a known process to optimize the process to optimize the yield and or purity.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 3,417,158, US 6,620,974, US6,465,695, US 4,329,514 and US 5,608,962.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean F. Vollano whose telephone number is 571-2720648. The examiner can normally be reached on Monday-Thursday 6:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272- 0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jean F. Vollano  
Primary Examiner  
Art Unit 1621

June 21, 2004